What is claimed is:

1. An image processing system comprising:

distortion correction means for correcting image signals to adjust the distortion in an image;

image projection means including a lens unit which has a focus adjustment function, the lens unit projecting an image based on the corrected image signals;

drive control means for controlling driving of the lens unit so that a focal length of the lens unit to an image projection area changes;

sensing means for sensing the projected image; and

distortion correction amount deriving means for deriving the focal length to a center of the image projection area and deriving an amount of distortion correction for the distortion correction means, based on sensing information from the sensing means,

wherein the distortion correction amount deriving means determines an optimum focal length to each of a plurality of boundary points in the image projection area, based on a change of luminance in a sensed image according to the sensing information; derives the focal length to the center of the image projection area, based on the optimum focal length to each of the boundary points; derives coordinates of the boundary points in a three-dimensional space, based on the optimum focal length to each of the boundary points and horizontal and vertical half angle-of-views in the image projection means; and derives the amount of distortion correction, based on the coordinates in the three-dimensional space,

wherein the distortion correction means corrects the image signals, based on the derived amount of distortion correction, and

wherein the drive control means controls the driving of the lens unit so that the focal length of the lens unit becomes the focal length to the center of the image projection area derived by the distortion correction amount deriving means .

2. The image processing system as defined in claim 1,

wherein the distortion correction amount deriving means determines the optimum focal length, based on a luminance distribution representing a relationship between luminance and number of pixels in a boundary region around each of the boundary points in a sensed image projection area according to the sensing information, on condition that the luminance distribution inside the sensed image projection area is different from the luminance distribution outside the image projection area.

3. The image processing system as defined in claim 1,

wherein the image is rectangular, and

wherein each of the boundary points is the corresponding one of vertexes of the rectangular image.

4. The image processing system as defined in claim 2,

wherein the image projection means projects a black colored image and a white colored image, and

wherein the distortion correction amount deriving means determines the sensed image projection area, based on a difference between the sensing information for the black colored image and for the white colored image.

5. An image processing system comprising:

a distortion correction section which corrects image signals to adjust the distortion in an image;

an image projection section which includes a lens unit which has a focus adjustment function, the lens unit projecting an image based on the corrected image signals;

a drive control section which controls driving of the lens unit so that a focal length of the lens unit to an image projection area changes;

a sensing section which senses the projected image; and

a distortion correction deriving section which derives the focal length to a center of the image projection area and derives an amount of distortion correction provided by the distortion correction section, based on sensing information from the sensing section,

wherein the distortion correction deriving section determines an optimum focal length to each of a plurality of boundary points in the image projection area, based on a change of luminance in a sensed image according to the sensing information; derives the focal length to the center of the image projection area, based on the optimum focal length to each of the boundary points; derives coordinates of the boundary points in a three-dimensional space, based on the optimum focal length to each of the boundary points and horizontal and vertical half angle-of-views in the image projection section; and derives the amount of distortion correction, based on the coordinates in the three-dimensional space,

wherein the distortion correction section corrects the image signals, based on the derived amount of distortion correction, and

wherein the drive control section controls the driving of the lens unit so that the focal length of the lens unit becomes the focal length to the center of the image projection area derived by the distortion correction deriving section.

6. A projector comprising:

distortion correction means for correcting image signals to adjust the distortion in an image;

image projection means including a lens unit which has a focus adjustment function, the lens unit projecting an image based on the corrected image signals;

drive control means for controlling driving of the lens unit so that a focal length of the lens unit to an image projection area changes;

sensing means for sensing the projected image; and

distortion correction amount deriving means for deriving the focal length to a center of the image projection area and deriving an amount of distortion correction for the distortion correction means, based on sensing information from the sensing means,

wherein the distortion correction amount deriving means determines an optimum focal length to each of a plurality of boundary points in the image projection area, based on a change of luminance in a sensed image according to the sensing information; derives the focal length to the center of the image projection area, based on the optimum focal length to each of the boundary points; derives coordinates of the boundary points in a three-dimensional space, based on the optimum focal length to each of the boundary points and horizontal and vertical half angle-of-views in the image projection means; and derives the amount of distortion correction, based on the coordinates in the three-dimensional space,

wherein the distortion correction means corrects the image signals, based on the derived amount of distortion correction, and

wherein the drive control means controls the driving of the lens unit so that the focal length of the lens unit becomes the focal length to the center of the image projection area derived by the distortion correction amount deriving means .

7. A projector comprising:

a distortion correction section which corrects image signals to adjust the distortion in an image;

an image projection section which includes a lens unit which has a focus adjustment function, the lens unit projecting an image based on the corrected image signals;

a drive control section which controls driving of the lens unit so that a focal length of the lens unit to an image projection area changes;

a sensing section which senses the projected image; and

a distortion correction deriving section which derives the focal length to a center of the image projection area and derives an amount of distortion correction provided by the distortion correction section, based on sensing information from the sensing section,

wherein the distortion correction deriving section determines an optimum focal length to each of a plurality of boundary points in the image projection area, based on a change of luminance in a sensed image according to the sensing information; derives the focal length to the center of the image projection area, based on the optimum focal length to each of the boundary points; derives coordinates of the boundary points in a three-dimensional space, based on the optimum focal length to each of the boundary points and horizontal and vertical half angle-of-views in the image projection section; and derives the amount of distortion correction, based on the coordinates in the three-dimensional space,

wherein the distortion correction section corrects the image signals, based on the derived amount of distortion correction, and

wherein the drive control section controls the driving of the lens unit so that the focal length of the lens unit becomes the focal length to the center of the image projection area derived by the distortion correction deriving section.

8. A computer-readable program for causing a computer to function as:

distortion correction means for correcting image signals to adjust the distortion in an image;

drive control means for controlling driving of a lens unit and driving of a sensing section, the lens unit projecting an image based on the corrected image signals

and having a focus adjustment function for changing a focal length of the lens unit to an image projection area, and the sensing section sensing the projected image; and

distortion correction amount deriving means for deriving the focal length to a center of the image projection area and deriving an amount of distortion correction for the distortion correction means, based on sensing information from the sensing means,

wherein the distortion correction amount deriving means determines an optimum focal length to each of a plurality of boundary points in the image projection area, based on a change of luminance in a sensed image according to the sensing information; derives the focal length to the center of the image projection area, based on the optimum focal length to each of the boundary points; derives coordinates of the boundary points in a three-dimensional space, based on the optimum focal length to each of the boundary points and horizontal and vertical half angle-of-views in the image projection means; and derives the amount of distortion correction, based on the coordinates in the three-dimensional space,

wherein the distortion correction means corrects the image signals, based on the derived amount of distortion correction, and

wherein the drive control means controls the driving of the lens unit so that the focal length of the lens unit becomes the focal length to the center of the image projection area derived by the distortion correction amount deriving means .

9. An information storage medium which stores a computer-readable program for causing a computer to function as:

distortion correction means for correcting image signals to adjust the distortion in an image;

drive control means for controlling driving of a lens unit and driving of a sensing section, the lens unit projecting an image based on the corrected image signals and having a focus adjustment function for changing a focal length of the lens unit to an

image projection area, and the sensing section sensing the projected image; and

distortion correction amount deriving means for deriving the focal length to a center of the image projection area and deriving an amount of distortion correction for the distortion correction means, based on sensing information from the sensing means,

wherein the distortion correction amount deriving means determines an optimum focal length to each of a plurality of boundary points in the image projection area, based on a change of luminance in a sensed image according to the sensing information; derives the focal length to the center of the image projection area, based on the optimum focal length to each of the boundary points; derives coordinates of the boundary points in a three-dimensional space, based on the optimum focal length to each of the boundary points and horizontal and vertical half angle-of-views in the image projection means; and derives the amount of distortion correction, based on the coordinates in the three-dimensional space,

wherein the distortion correction means corrects the image signals, based on the derived amount of distortion correction, and

wherein the drive control means controls the driving of the lens unit so that the focal length of the lens unit becomes the focal length to the center of the image projection area derived by the distortion correction amount deriving means .

10. An image processing method comprising:

projecting a predetermined calibration image while changing a focal length of a lens unit;

sensing the calibration image depending on a change in the focal length of the lens unit;

determining an optimum focal length to each of a plurality of boundary points in an image projection area, based on a change of luminance in a sensed image according to sensing information;

deriving coordinates of the boundary points in a three-dimensional space, based on the optimum focal length to each of the boundary points and horizontal and vertical half angle-of-views in image projection means;

deriving an amount of distortion correction, based on the coordinates in the three-dimensional space;

correcting image signals so that distortion in the image is corrected, based on the derived amount of distortion correction;

deriving a focal length to a center of the image projection area, based on the optimum focal length to each of the boundary points in the image projection area;

changing the focal length of the lens unit so that the focal length of the lens unit becomes the derived focal length to the center of the image projection area; and

projecting the image, based on the corrected image signals.

11. The image processing method as defined in claim 10, comprising:

determining the optimum focal length, based on a luminance distribution representing a relationship between luminance and number of pixels in a boundary region around each of the boundary points in a sensed image projection area according to the sensing information, on condition that the luminance distribution inside the sensed image projection area is different from the luminance distribution outside the image projection area.

12. The image processing method as defined in claim 10,

wherein the image is rectangular, and

wherein each of the boundary points is the corresponding one of vertexes of the rectangular image.

13. The image processing method as defined in claim 11, comprising:

projecting at least a black colored image and a white colored image as the calibration image; and

determining the sensed image projection area, based on a difference between the sensing information for the black colored image and for the white colored image.

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